Product Prioritization for Standards & Labeling Programs

An Introduction to Product and Policy Analysis (PPAT) Tool

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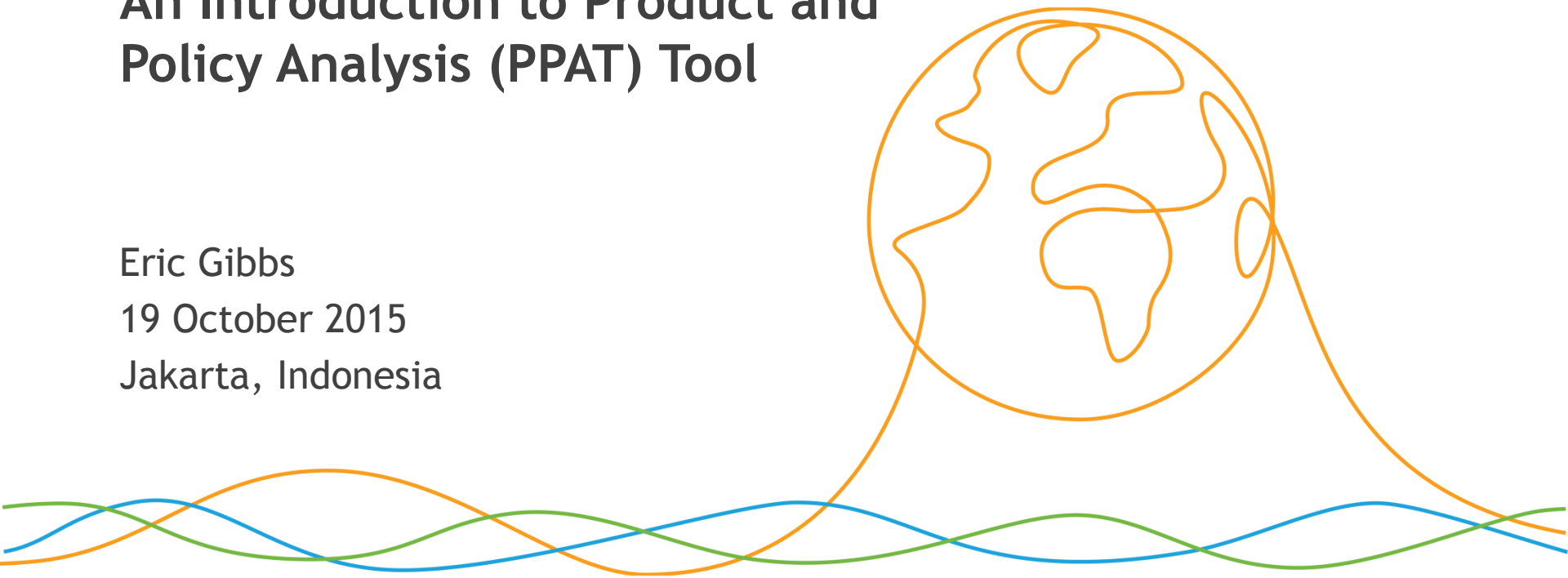
Jakarta, Indonesia



Need for Product Prioritization

PPAT Introduction

- Product Prioritization and Analysis Tool (PPAT) was developed to inform strategic decisions about which products to incorporate into standards and labeling program, based on potential energy and cost savings.

- The PPAT generates scenarios based on current and forecasted market data and policy circumstances.

Product and Policy Analysis Tool (PPAT)

- Conduct the national impact analysis
  - Energy saving
  - Greenhouse gas emissions reduction
- Create a roadmap for future policy planning
- Identify next set of products for standards and labeling
- Determine most relevant policy implementation approach
  - Labels or Standards or Both
  - Mandatory or Voluntary
  - Comparative or Endorsement

Input Parameters

	Parameter	Weight
1.	GHG abatement potential of products	75%
2.	Implementability	25%

1. Quantitative Parameters
   - Product's annual sales
   - Future growth projections
   - Average power consumption
   - Usage pattern (Hours per day and days in a year)
   - Diversity factor
   - Saving potential
2. Qualitative Parameters
   - Test procedure/ standards (National or International): Does it exist?
   - Test laboratories, manufacturers, organized/ un organized sector
   - Implementing associations/ partners

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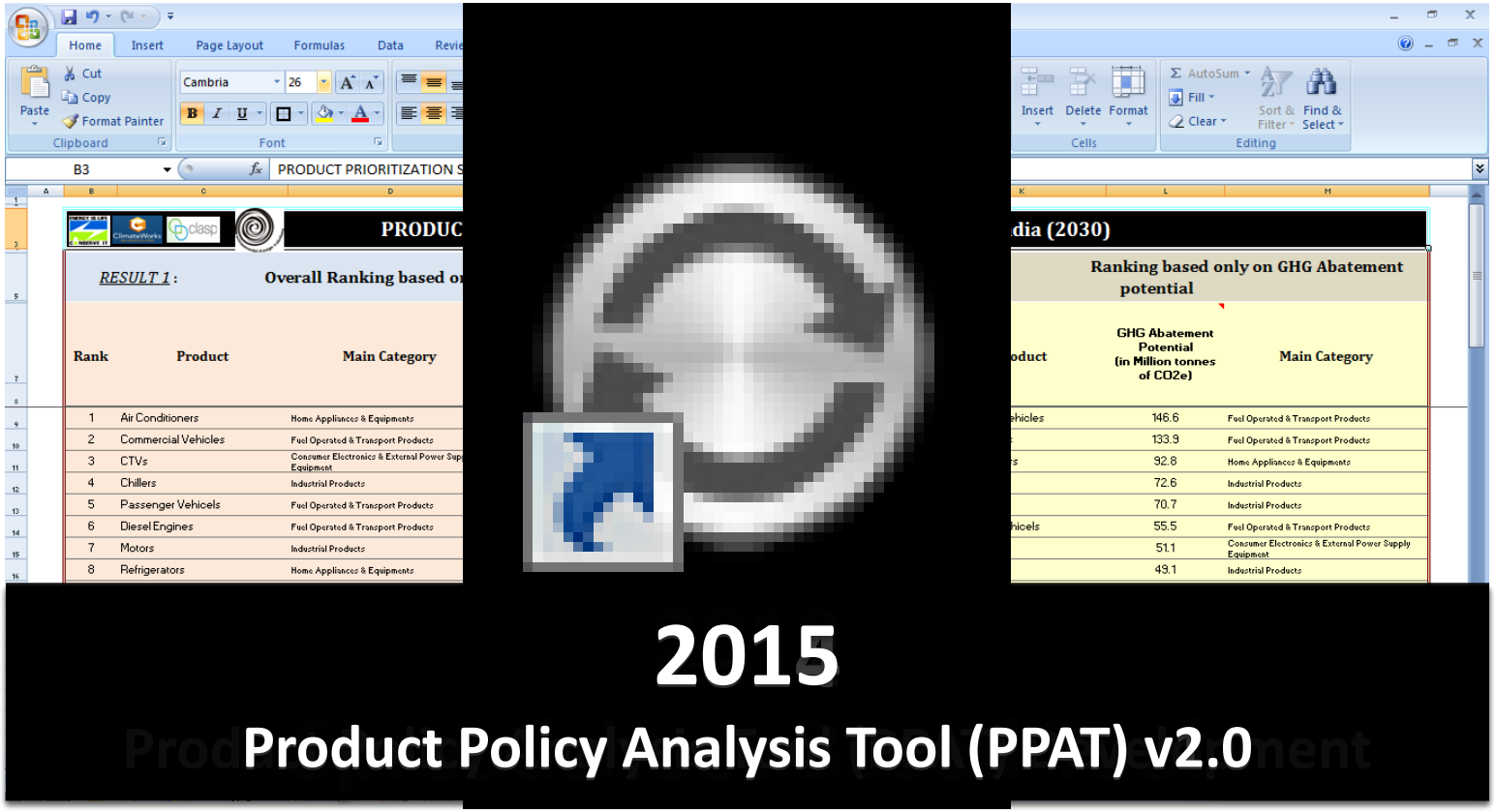

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Product Policy Analysis Tool (PPAT) v2.0

Model Framework

Research and Data collection

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Modeling and Analysis

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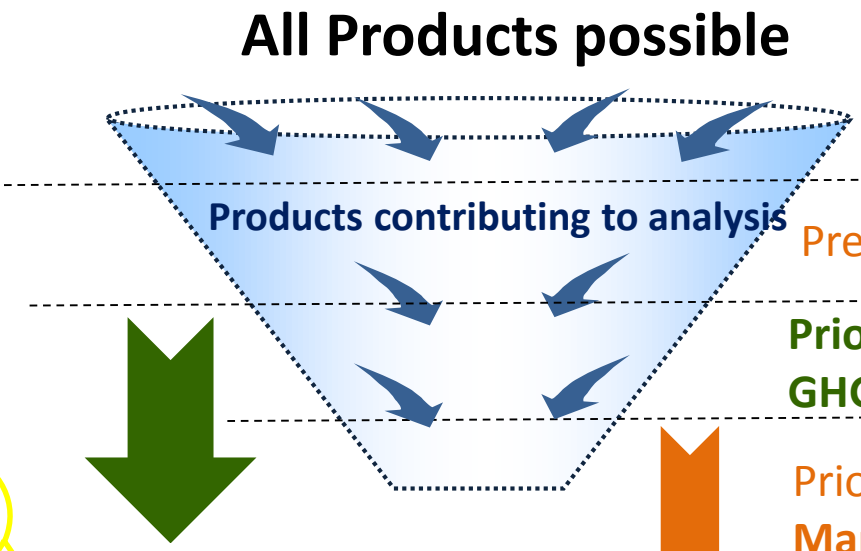
Result

MODEL CAPABILITY:

- Results based on Technical and Qualitative Criteria
- Dynamic, flexible and user input driven



Initial Filter – size in Indonesian market, data availability

Prescreening

Prioritization criterion 1. GHG Abatement Potential

Prioritization criterion 2. **Market Implementability**

Top 10 products on basis of GHG abatement potential

Top 10 products on basis of GHG abatement potential and Market implementability

Quantitative Analysis Equation

Surviving Stock	Annual Energy Consumption	Energy Saving Potential	Emission Factor	GHG Abatement Potential
Surviving stock in Analysis Year	Calculated by multiplying rated energy consumption by annual usage	Savings expected depending upon improvement in technology	Quantifies environmental impact in terms of tonnes equivalent of CO_2 abated	Total GHG Abatement Potential in the Analysis Year.

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Key Capabilities

- Data Simulation
- Policy Analysis
- Scenario comparison
- Life cycle analysis
- Visuals and Reports

Data Simulation

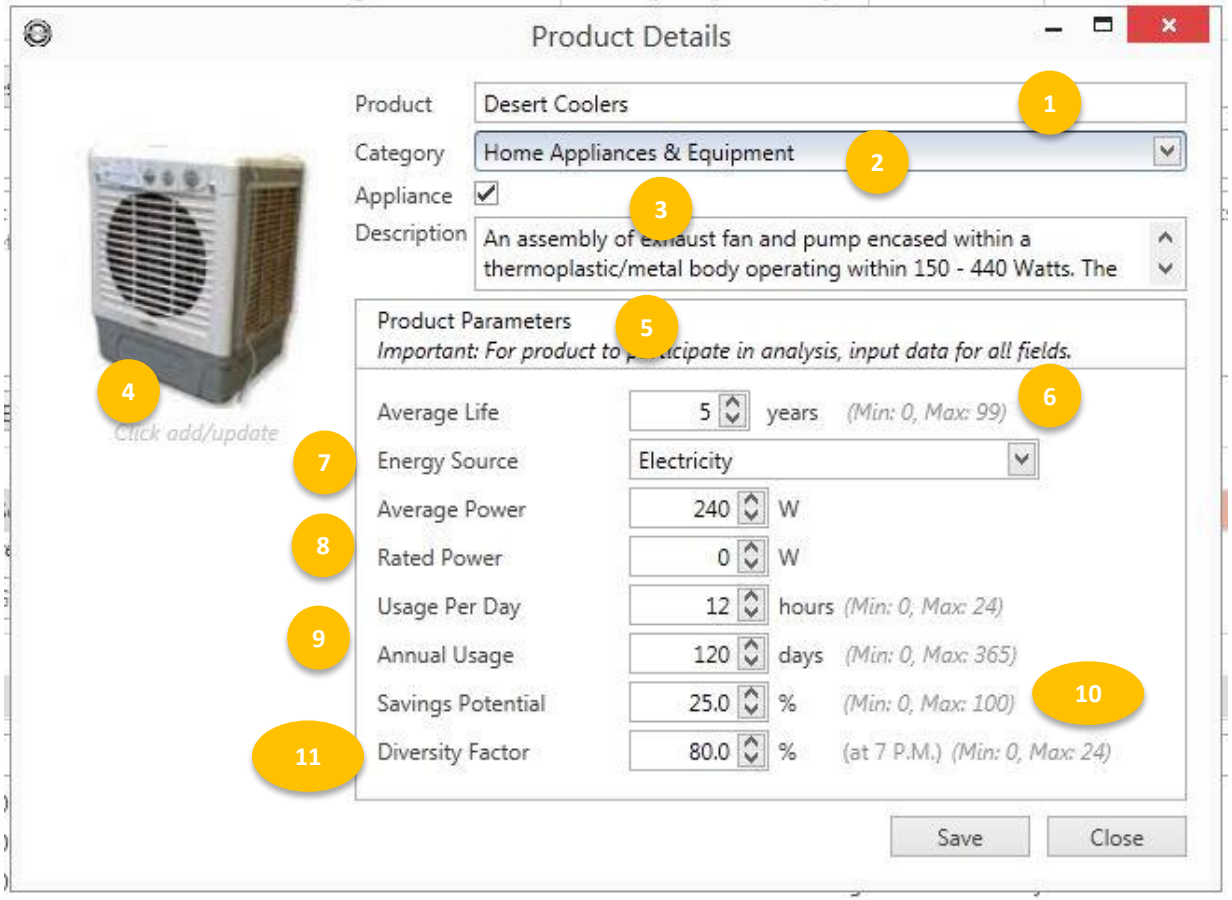
- Data entry and editing- Ability to add, delete and modify data on product, product categories

- Dynamic tool- allows users to edit/add values for most of the parameters i.e., emission factor, data source, growth rate etc.

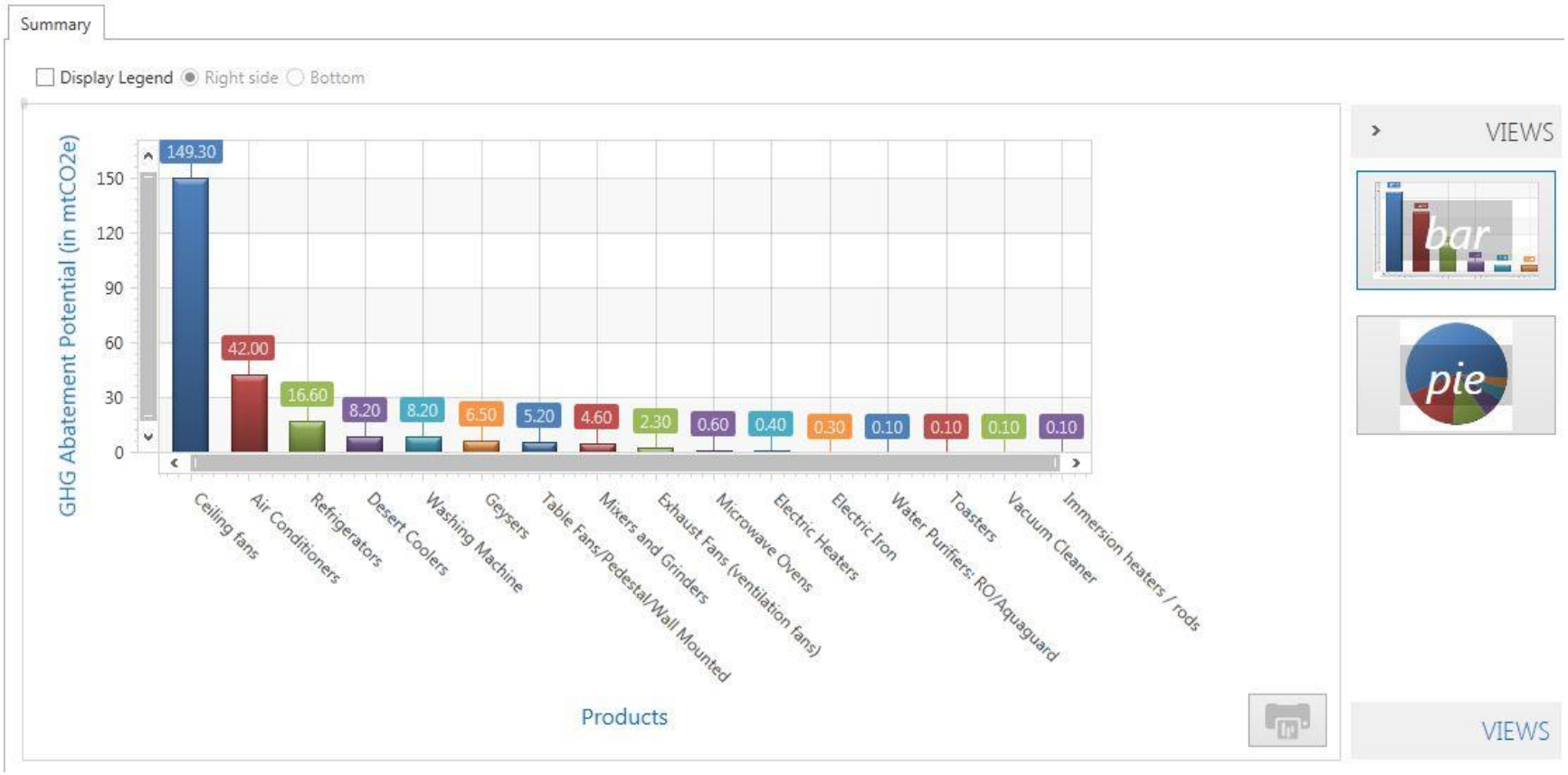
- Ability to select data from multiple sources such as manufacturing associations, BEE, consumer organisations etc.

Add Product Parameters

1. Assignment of unique Product Name to each product.
2. Product assignment to relevant Category.
3. Toggle to select whether product is an Appliance or not.
4. Facility to add Product Image.
5. Facility to add Product Parameters that are required for tool to perform analyses.
6. Refers to useful life of a product after which it either wears down and/or is discarded. Input for Average Life of product is critical to estimating surviving stock.
7. Assumes list of Energy Source from list of sources defined.
8. Tool utilizes either Average or Rated rate of energy consumption. Incase input for both is provided, tool utilizes Average rate of energy consumption.
9. Annual and daily usage details collected/processed from U&A survey.
10. Savings potential reflects forecasted savings possible for product due to upgrade in technology, operation or policy.
11. Diversity factor reflects the percentage of equipment in operation at the time of peak demand occurrence



Policy Analysis

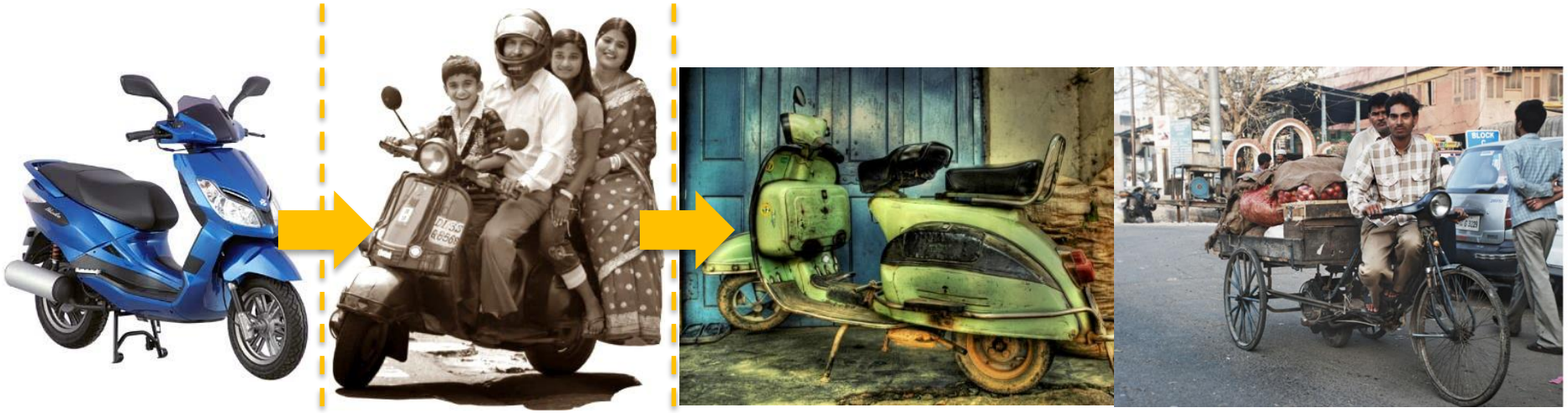


Ranking of products based on energy and GHG savings

Market Implementability

1. Product list
2. Qualitative parameters
3. Normalized score
4. User assigned weights

Calculation of surviving stock



owners of new appliance

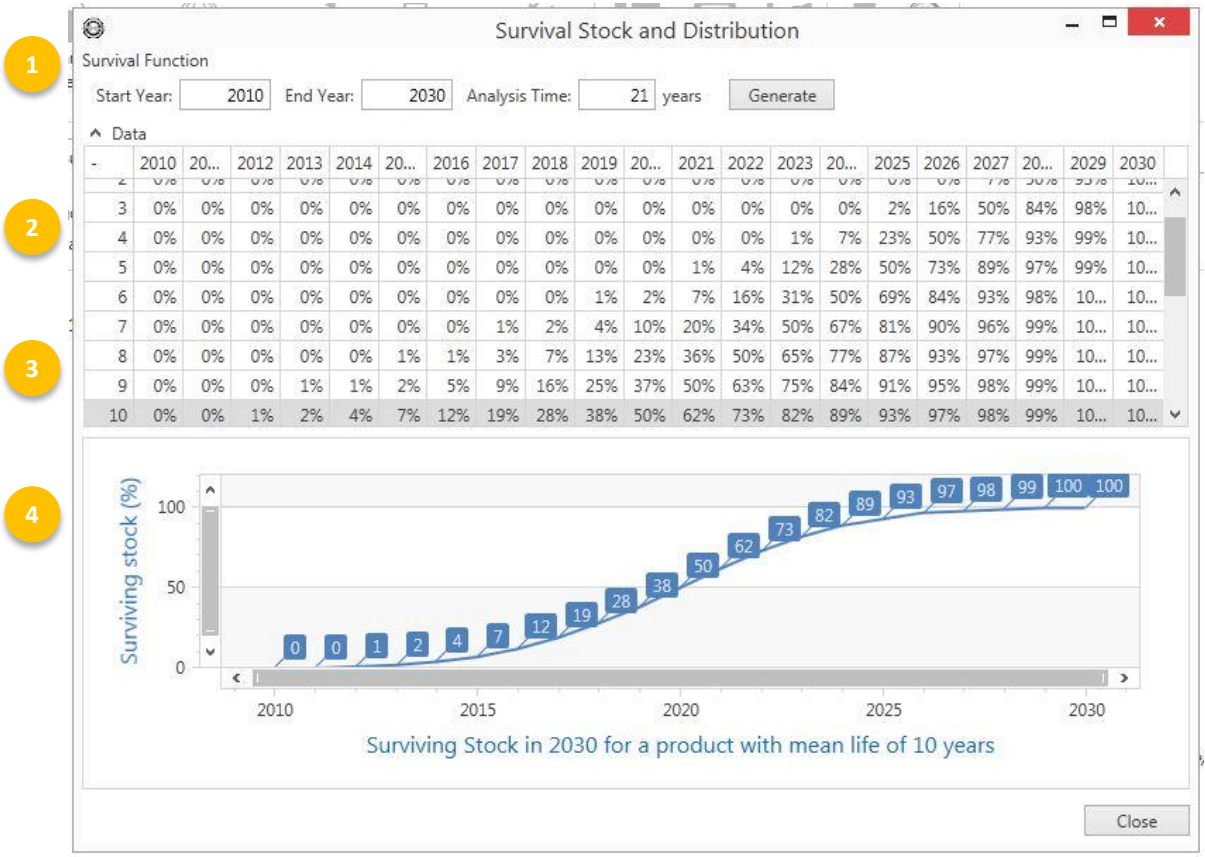
owners of appliances with product's life extended by repairs

owners of extended lifetime appliances

- Stock Accounting Model (SAM)
  - Normal distribution

Survival Stock Estimation Module

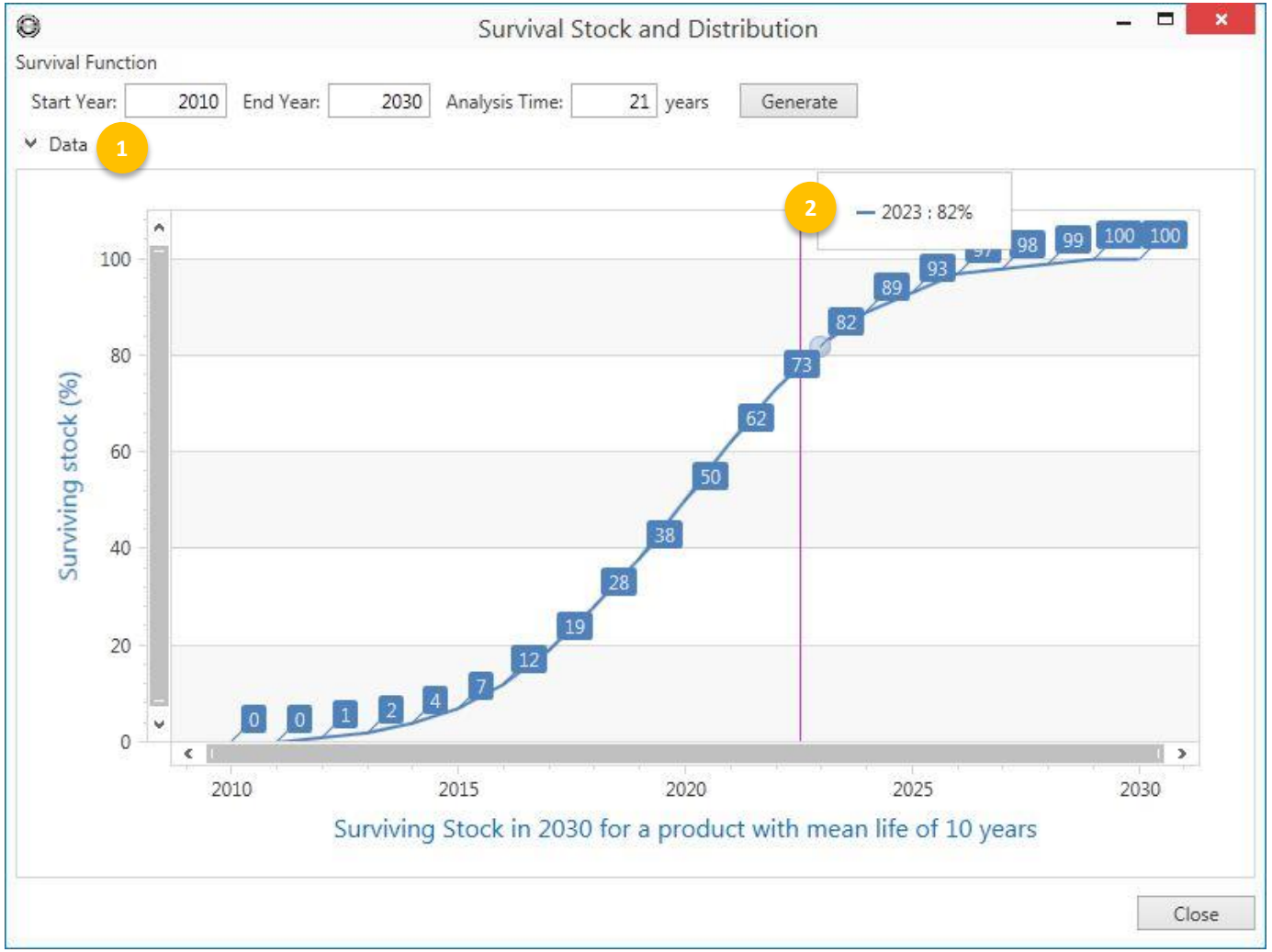
1. Reports analysis time frame used for the stock generation.
2. Population distribution represented in a matrix. The cell $i_{(r,c)}$, identified as intersection of row ‘r’ and column ‘c’ signifies surviving population for a product with mean life ‘r’ in year ‘c’. Sum of cells in row ‘r’ from year c_1 to year c_n reports surviving stock for product with mean life ‘r’ in year c_n.
3. Graph for highlighted year (10 years).
4. Representation of population distribution for a given mean life in graphical format. The graph represents information only for the selected mean life (or row).



Survival Sock Estimation Module

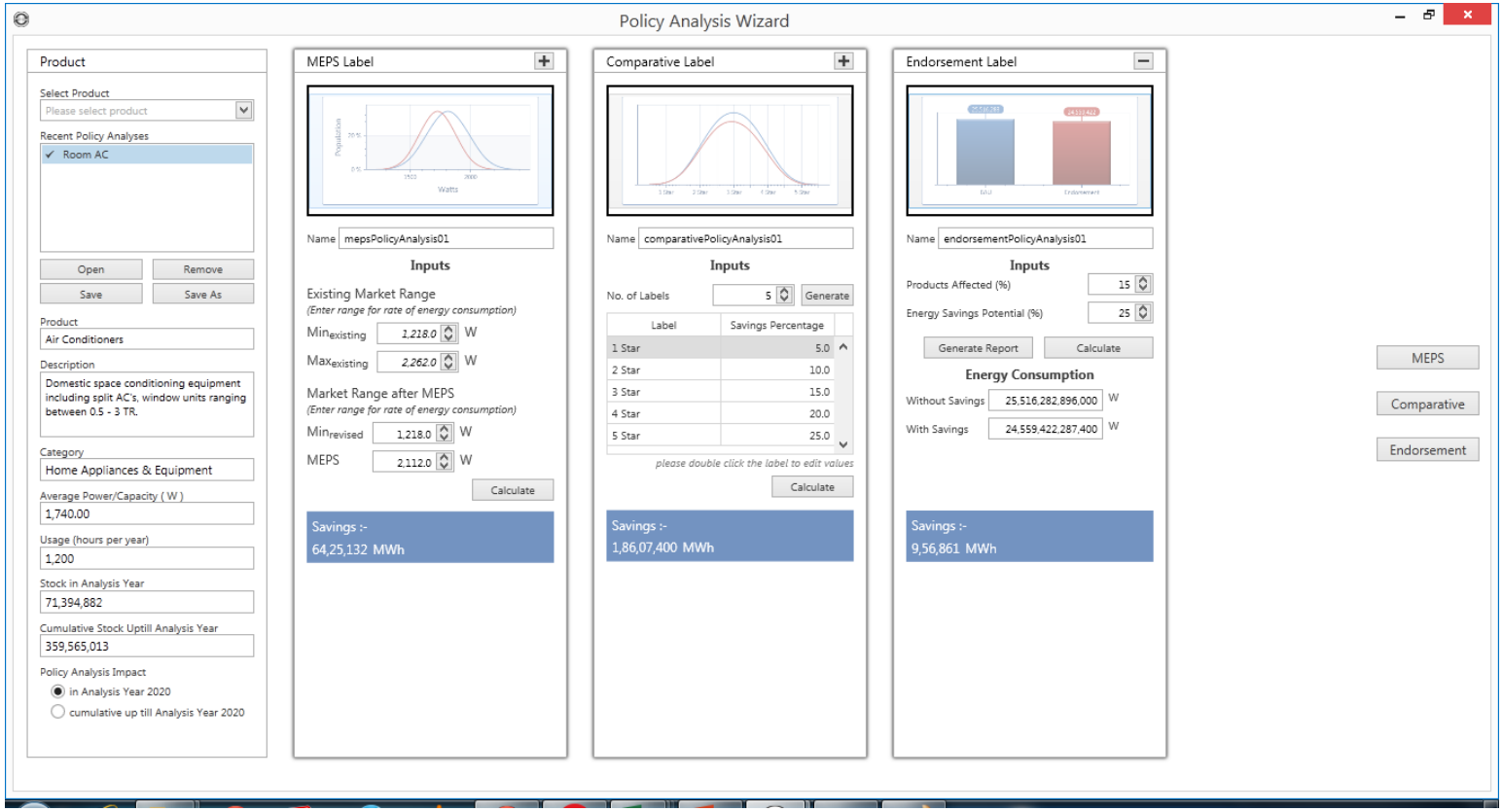
Forecasting Surviving Stock

1. Expanded graphic view.
2. Data tool tips and threshold marker on mouse over.



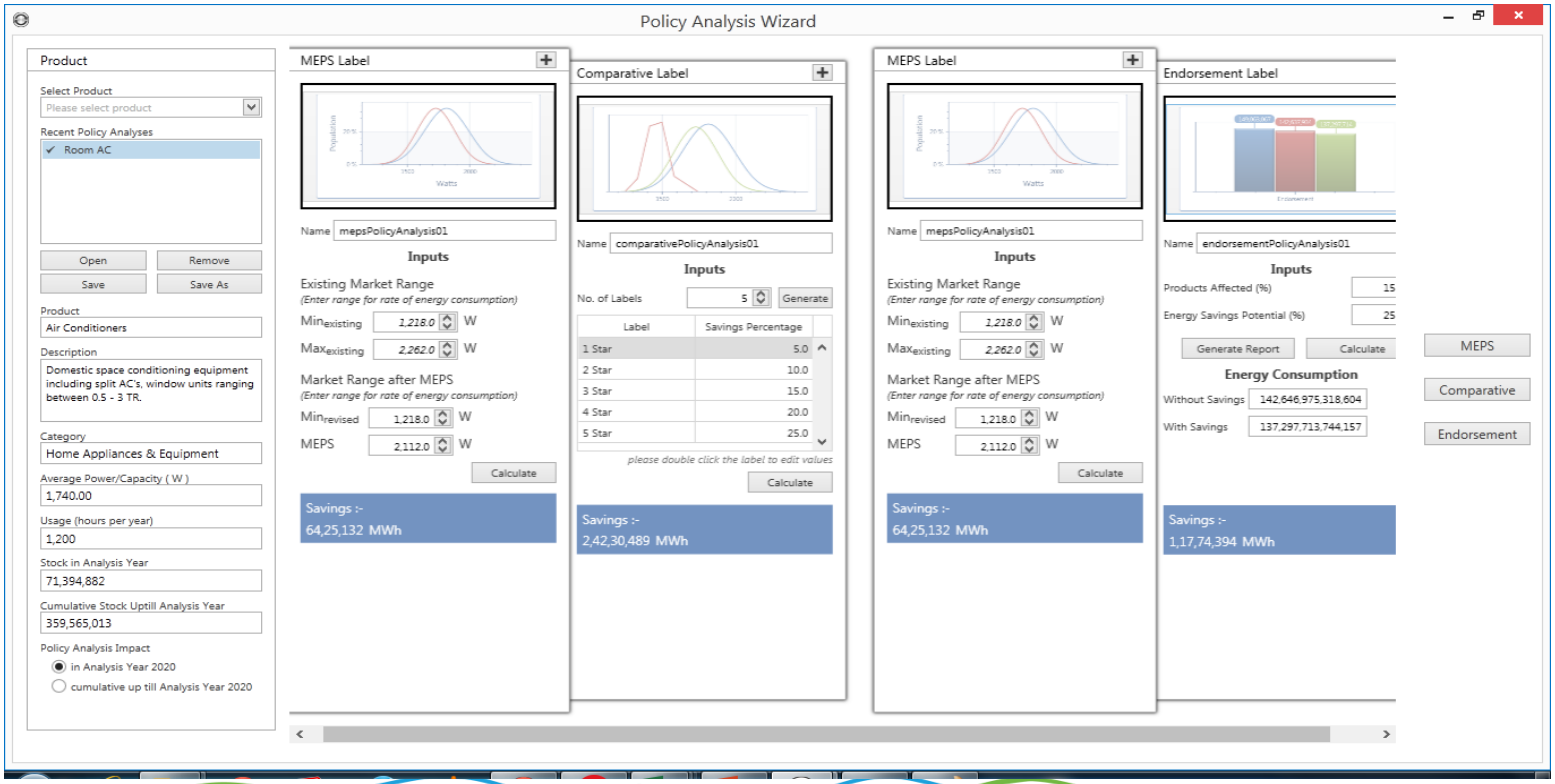
Policy Analysis

- Allows modeling policy scenario and measure the impact of S&L strategies on Market Transformation.
  - MEPS, Comparative, Endorsement



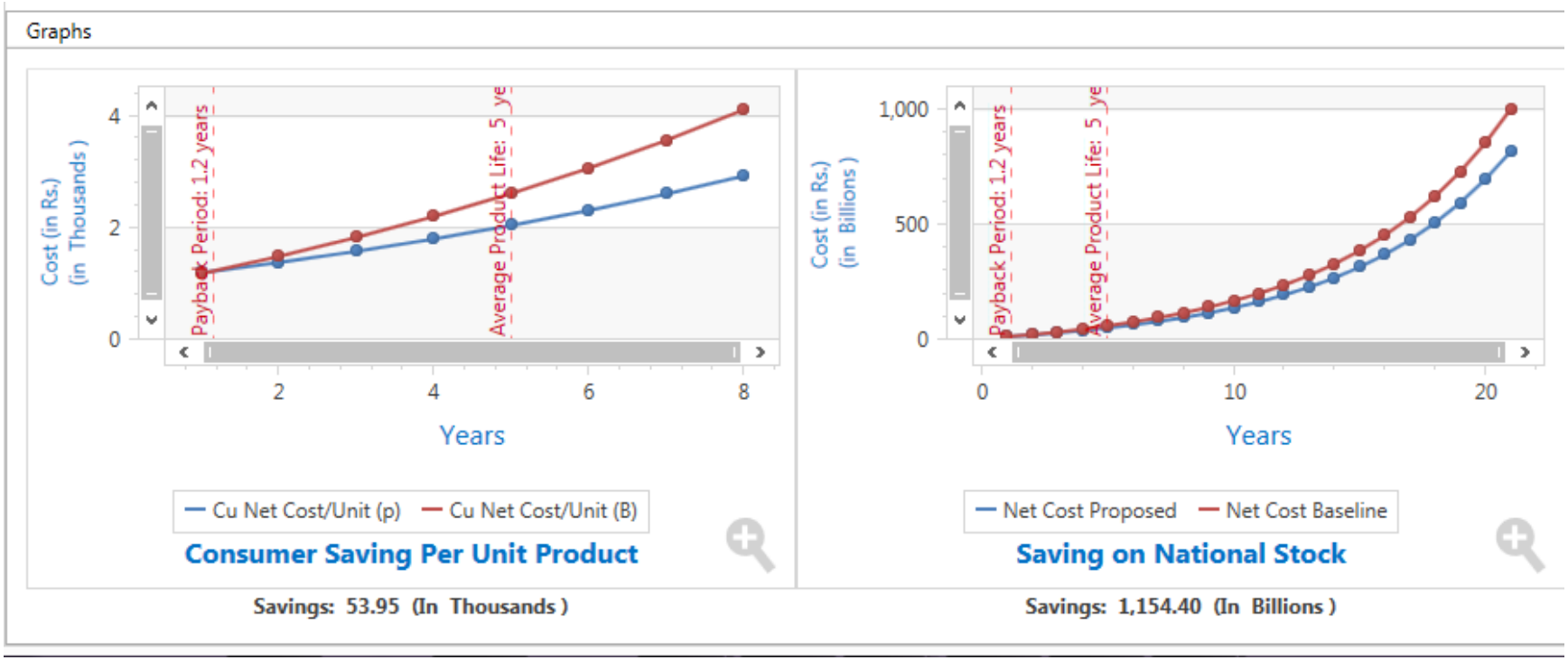
Scenario Comparison

- Analysis of savings from a combination of S&L policy types
- Combination strategies include MEPS-comparative, MEPS-Endorsement, MEPS Comparative endorsement or Comparative endorsement



Life Cycle Analysis

- Monetary savings and pay back period are calculated over the life of the product
- Calculated for ***Consumers*** on per unit cost and on ***National*** stock.



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Visuals and Reports

- Data export
- Automated report generation
- Data Visualisation

Data Export

- Information on product ranking, energy savings and GHG abatement potential can be exported in various formats including word, excel and pdf
- Export allows post processing of data

Summary

Product Rankings

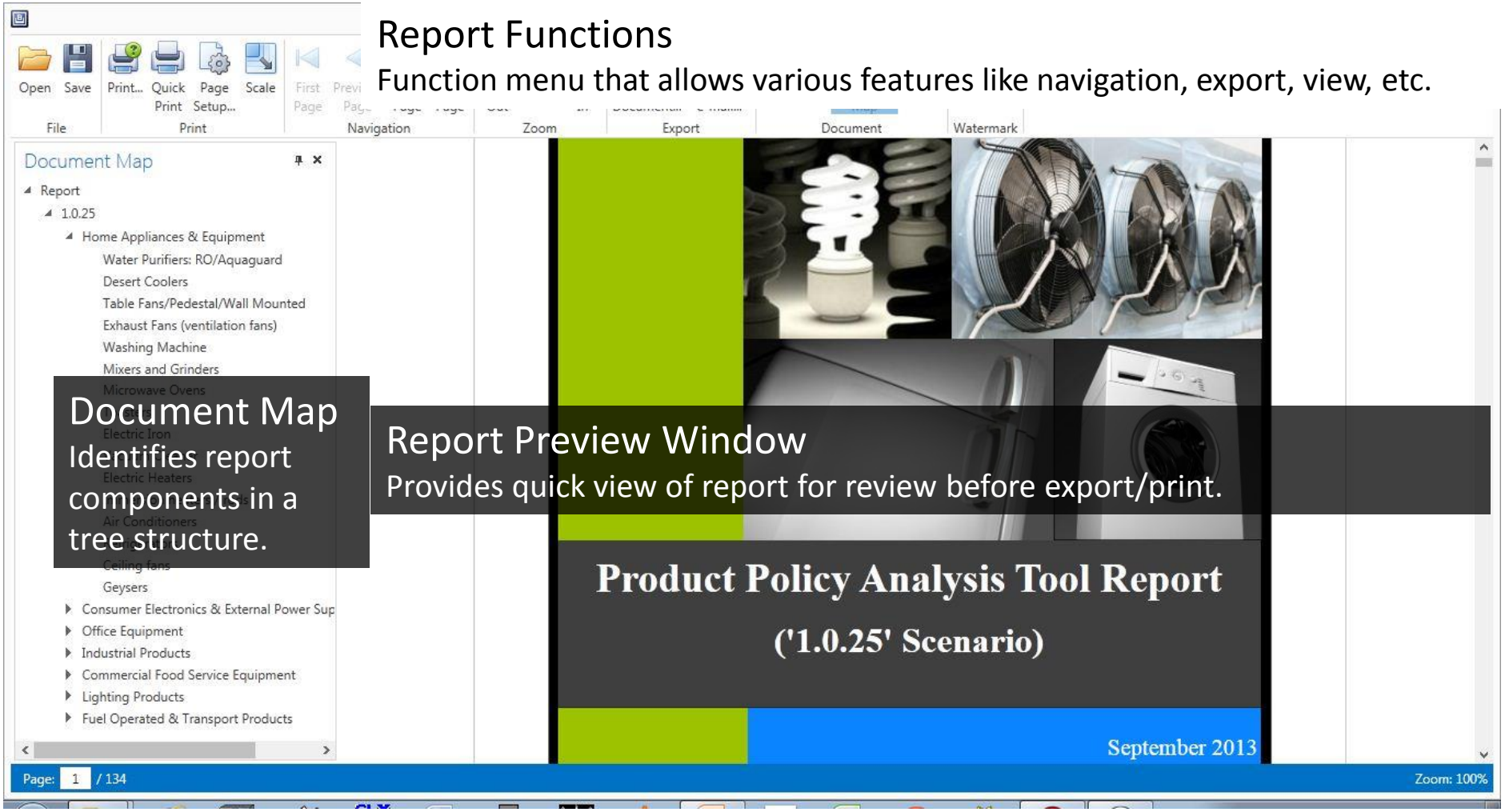
Product	Ranking		Expected Energy Savings		GHG Abatement Potential
	Within Category	Overall		Units	(in mtCO2e)
Energy Source: Electricity			**103,315,352**		**84.6**
Ceiling fans	1	4	53,871,939	MWh	44.2
Air Conditioners	2	6	22,360,877	MWh	18.3
Refrigerators	3	8	9,109,148	MWh	7.5
Washing Machine	4	11	4,543,579	MWh	3.7
Geysers	5	12	3,430,921	MWh	2.8
Microwave Ovens	6	14	295,075	MWh	0.2
Vacuum Cleaner	7	15	53,919	MWh	0.0
Table Fans/Pedestal/Wall...	8	20	2,651,462	MWh	2.2
Water Purifiers: RO/Aquag...	9	34	83,611	MWh	0.1
					84.6

Products

Automated Report Generation

Report Functions

Function menu that allows various features like navigation, export, view, etc.

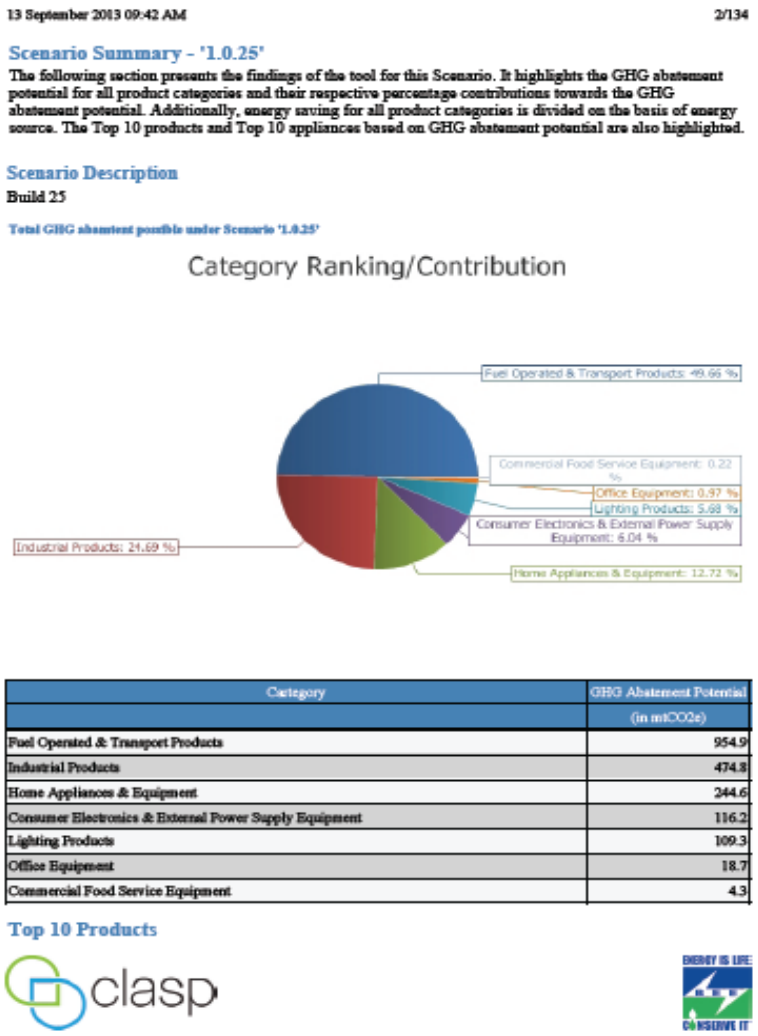


Document Map
Identifies report components in a tree structure.

Report Preview Window
Provides quick view of report for review before export/print.

Report Generation Module

1. Reporting for 2 scenarios at a time.
2. Custom page setup
3. Custom print settings
4. Export (as an e-mail, pdf, etc)
5. Selective export
6. Navigation
7. Report encryption
8. Watermark



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Scenario Summary - '1.0.25'

The following section presents the findings of the tool for this Scenario. It highlights the GHG abatement potential for all product categories and their respective percentage contributions towards the GHG abatement potential. Additionally, energy saving for all product categories is divided on the basis of energy source. The Top 10 products and Top 10 appliances based on GHG abatement potential are also highlighted.

Scenario Description

Build 25

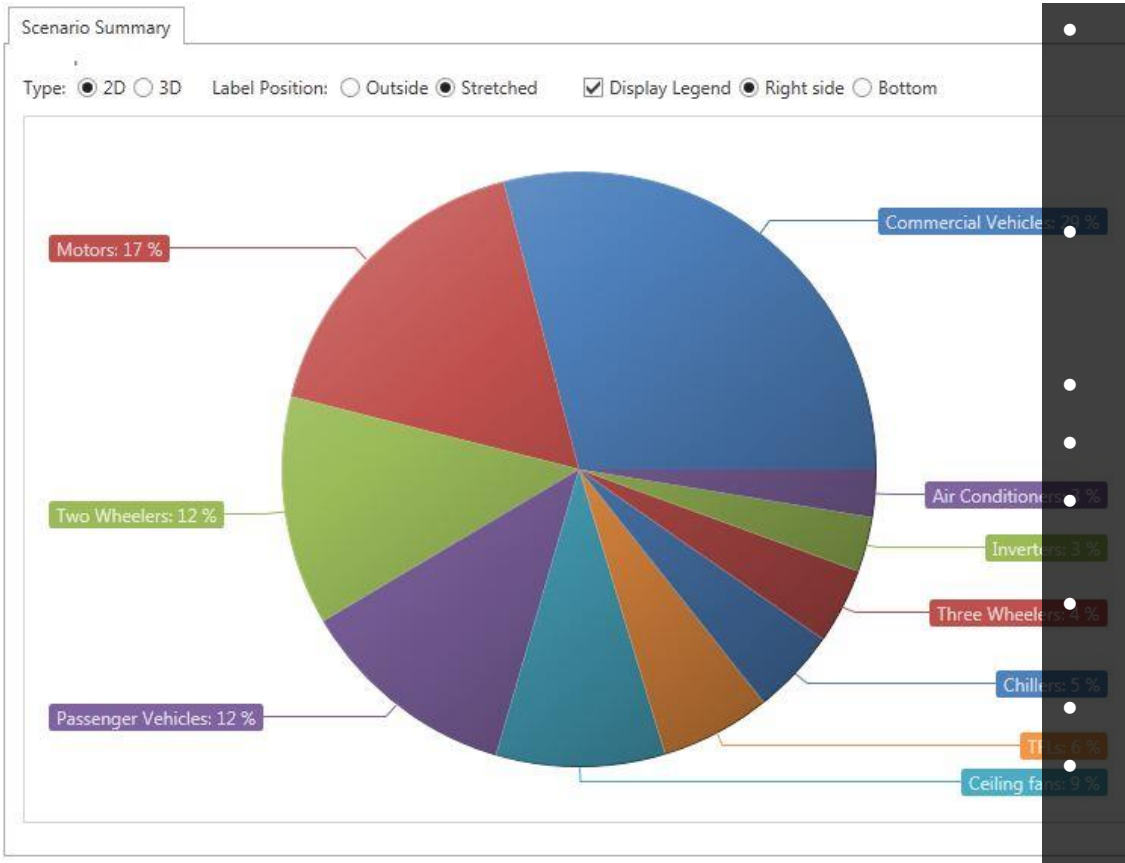
Total GHG abatement possible under Scenario '1.0.25'

Category Ranking/Contribution

Category	GHG Abatement Potential (in mtCO2e)
Fuel Operated & Transport Products	954.9
Industrial Products	474.8
Home Appliances & Equipment	244.6
Consumer Electronics & External Power Supply Equipment	116.2
Lighting Products	109.3
Office Equipment	18.7
Commercial Food Service Equipment	4.3

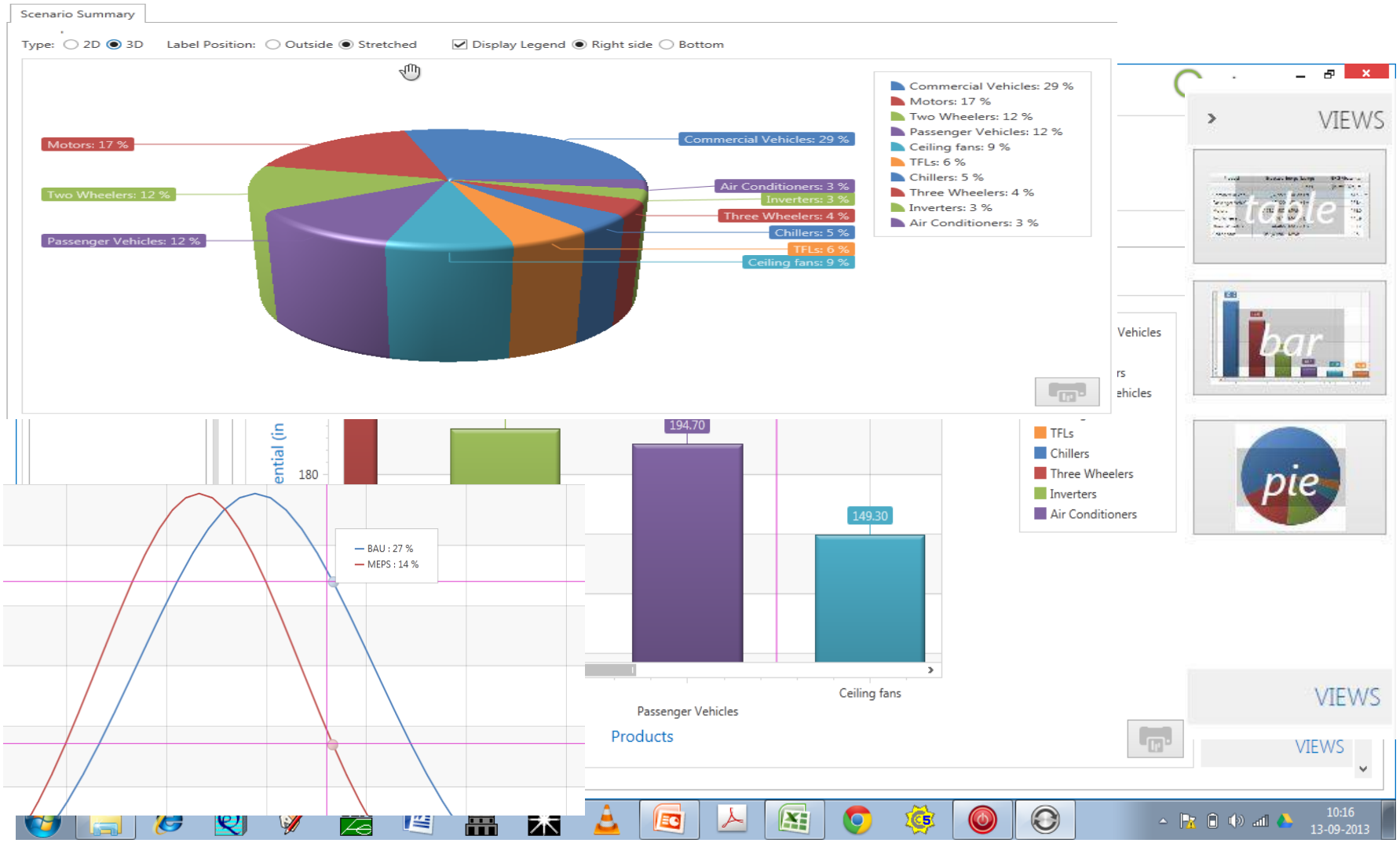
Top 10 Products

Data Visualisation



- Graph toggle toolbar
  - Pie Chart
  - Bar Chart
  - Tabular format
- Other graphical display formats
  - Line Chart
  - Scatter with smooth lines
- Legend display toggle
- 2-D/3-D display
- Capability to export views individually.
- ‘Zoom in’ , ‘pan’ and ‘View Window maximize’ capability
- Animated visualizations
- Color schema reflecting primary colors

Data Visualisation



Common Challenges

- Data collection and updation
- Lack of detailed studies for all the product categories that provide/validate the assumptions used in the tool on
  - Usage pattern
  - Average life of products
  - Efficiency degradation
  - Market segmentation
  - Anticipated/available technological upgrades

Thanks!

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